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☐ 1. Document ID: US 6295086 B1

L1: Entry 1 of 1 File: USPT Sep 25, 2001

US-PAT-NO: 6295086
DOCUMENT-IDENTIFIER: US 6295086 B1

TITLE: Apparatus and method for generating digital still image files from digital moving images

DATE-ISSUED: September 25, 2001

INVENTOR-INFORMATION:

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APPL-NO: 8/ 847579
DATE FILED: April 21, 1997

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	8-126287	April 24, 1996

INT-CL: [7] H04 N 5/76, H04 N 5/781, H04 N 5/85, H04 N 5/90

US-CL-ISSUED: 348/231; 386/125, 348/232
US-CL-CURRENT: 348/231; 348/232, 386/125

FIELD-OF-SEARCH: 348/231, 348/232, 348/233, 348/220, 348/222, 386/45, 386/4, 386/69, 386/70, 386/52, 386/64, 386/125, 386/126, 386/95, 345/328

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
4430675	February 1984	Fujime	358/342
4903132	February 1990	Yamawaki	358/209
5301240	April 1994	Stockum et al.	382/1
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5806072	September 1998	Kuba et al.	707/200
5966496	October 1999	Takimoto	386/95
6101292	August 2000	Udagawa et al.	382/299

ART-UNIT: 262
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ABSTRACT:

To capture digital moving image information supplied from a digital VTR and to generate high quality still image data files, a programmable controller executes program instructions to determine whether an image capturing operation has been activated and to determine whether the extracted frame is valid/appropriate. If so, a header is appended, based on various video transmission standards such as NTSC or PAL, to the extracted frame data, thereby generating an image file. The frame data following this header is then recorded to the recording medium, such as a disk, for subsequent signal processing by the programmable controller.

13 Claims, 27 Drawing figures

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US-CL-CURRENT: 348/231; 348/232, 386/125

CLAIMS:

What is claimed is:

1. A device operative within a computer for processing digital moving image data, comprising:

image data extracting means for receiving digital moving image data transmitted from a video recorder to said computer in packets formatted in accordance with the IEEE 1394 serial bus standard, determining which one of a plurality of television formats the digital moving image data conforms to, and extracting from the image data a plurality of still images, each of said still images represented by frame data of an image frame; and

image file generating means for generating a plurality of data files, each corresponding to one of said still images, each said data file including the extracted frame data and file management data corresponding to the extracted frame data, wherein said file management data includes: detailed format information for indicating said determined television format corresponding to said digital moving image data; file identification information for identifying said data file; file version information for indicating a version of said data file; data attribute information for specifying preselected data attributes; file size information for indicating length of said data file; data size information for indicating length of the extracted frame data in said data file; and data offset information defining an offset between a data area and a header area of said data file.

2. The device according to claim 1, further comprising digital image equipment for recording/reproducing images represented by digital signals according to a preselected format, wherein said digital signals correspond to said digital moving image data.

3. A method for processing digital moving image data, said method comprising the steps of:

receiving, by a computer, digital moving image data transmitted from a video recorder in packets formatted in accordance with the IEEE 1394 serial bus standard;

determining which one of a plurality of television formats the received digital moving

image data conforms to;

extracting from said digital moving image data a plurality of still images, each of said still images represented by frame data of an image frame; and

generating a plurality of data files, each corresponding to one of said still images, each of said data files including the extracted frame data and file management data corresponding to the extracted frame data, wherein said file management data includes: detailed format information indicating said determined television format corresponding to said digital moving image data; file identification information for identifying said data file; file version information for indicating a version of said data file; data attribute information for specifying preselected data attributes; file size information for indicating length of said data file; data size information for indicating length of the extracted frame data in said data file; and data offset information defining an offset between a data area and a header area of said data file.

4. The method according to claim 3, further comprising recording/reproducing images represented by digital signals according to a preselected format, wherein said digital signals correspond to said digital moving image data.

5. The method according to claim 3, wherein said received digital moving image data is received from a digital VTR.

6. A system for processing digital moving image data, comprising:

an image processing device within a computer, said image processing device including image data extracting means for receiving said digital moving image data transmitted from a video recorder in packets formatted in accordance with the IEEE 1394 serial bus standard, determining which one of a plurality of television formats the digital moving image data conforms to, and extracting a plurality of still images, each represented by frame data of an image frame, from said digital moving image data, and that includes image file generating means for generating a plurality of data files, each corresponding to one of said still images, wherein each of said data files contains the extracted frame data and file management data corresponding to the extracted frame data, said file management data including: detailed format information for indicating said determined television format corresponding to said digital moving image data; file identification information for identifying said data file; file version information for indicating a version of said data file; data attribute information for specifying preselected data attributes; file size information for indicating length of said data file; data size information for indicating length of the extracted frame data in said data file; and data offset information defining an offset between a data area and a header area of said data file; and

a recording device for recording said data files.

7. The system according to claim 6, further comprising a personal computer that includes said image processing device and said recording device.

8. The system according to claim 6, further comprising digital image equipment for recording/reproducing images represented by digital signals according to a preselected format, wherein said digital signals correspond to said digital moving image data.

9. The system according to claim 6, wherein said received digital image data has a digital VTR compatible format.

10. An image display device, including a recording medium, for displaying images derived from digital moving image data received from a video recorder, comprising:

data reproducing means for reproducing from said recording medium still image data files containing file management data and frame data that is extracted from said digital moving image data, said file management data including: detailed format information for indicating a television format determined to correspond to said digital moving image data; file identification information for identifying said data file; file version information for indicating a version of said data file; data attribute information for specifying preselected data attributes; file size information for indicating length of said data file; data size information for indicating length of the extracted frame data in said data file; and data offset information defining an offset between a data area and a header area of said data file; and

display control means for preselectively decoding data of said still image data files and for displaying images based on the decoded data.

11. The image display device according to claim 10, further comprising a personal computer that includes said data reproducing means and display control means.

12. A recording medium readable by a computer for storing data corresponding to digital moving image data received from a video recorder, comprising:

a plurality of data files representing respective still images, each data file containing file management data and frame data that is extracted by said computer from said digital moving image data, said file management data including; detailed format information for indicating a television format determined to correspond to said digital moving image data; file identification information for identifying said data file; file version information for indicating a version of said data file; data attribute information for specifying preselected data attributes; file size information for indicating length of said data file; data size information for indicating length of the extracted frame data in said data file; and data offset information defining an offset between a data area and a header area of said data file.

13. A method for processing digital moving image data comprising:

extracting still image data from said digital moving image data;

generating an image data file representing one frame of said digital moving image data, said file including an IEEE 1394 standard header, a cyclic redundancy check header, an AV header and packet data comprising a predetermined number of bytes of said still image data;

transmitting said generated image data file in packets formatted in accordance with the IEEEE 1394 serial bus standard to a personal computer having an image capturing means that receives said transmitted packets and extracts frame data representing still images therefrom; and

generating, by said computer, a plurality of data files, each corresponding to one of said still images, each of said data files including the extracted frame data and file management data corresponding to the extracted frame data, wherein said file management data includes; detailed format information indicating said determined television format corresponding to said digital moving image data; file identification information for identifying said data file; file version information for indicating a version of said data file; data attribute information for specifying preselected data attributes; file size information for indicating length of said data file; data size information for indicating length of the extracted frame data in said data file; and data offset information defining an offset between a data area and a header area of said data file.